

Super-Small Package VFM Control Step-up Switching Regulator

General Description

The LN3608 is a constant frequency, 6-pin SOT23 current mode step-up converter intended for small, low power applications. The LN3608 switches at 1.2MHz and allows the use of tiny, low cost capacitors and inductors. Internal soft-start results in small inrush current and extends battery life.

The LN3608 features automatic shifting to pulse frequency modulation mode at light loads. The LN3608 includes under-voltage lockout, current limiting, and thermal overload protection to prevent damage in the event of an output overload.

Applications

- Battery-Powered Equipment Set-Top Boxed
- LCD Bias Supply
- DSL and Cable Modems and Routers Networking cards powered from PCI or PCI express slots

Ordering Information

LN3608 ①②

Designator	Symbol	Description
①	A	Feedback voltage 0.6V
②	R	Embossed Tape: Standard Feed
	L	Embossed Tape: Reverse Feed

Features

- Integrated 80mΩ Power MOSFET
- 2V to 24V Input Voltage
- 1.2MHz Fixed Switching Frequency
- Internal 4A Switch Current Limit
- Adjustable Output Voltage
- Internal Compensation
- Up to 24V Output Voltage
- Automatic Pulse Frequency Modulation Mode at Light Loads
- up to 93% Efficiency

Package

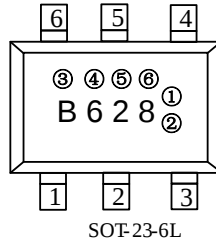
- SOT-23-6L

Pin Configuration

Pin Number	Pin Name	Function
5	VIN	Power Input
3	FB	Feedback
2	GND	Common Ground
1	SW	Switching Output
4	EN	Chip Enable
6	NC	No Connect

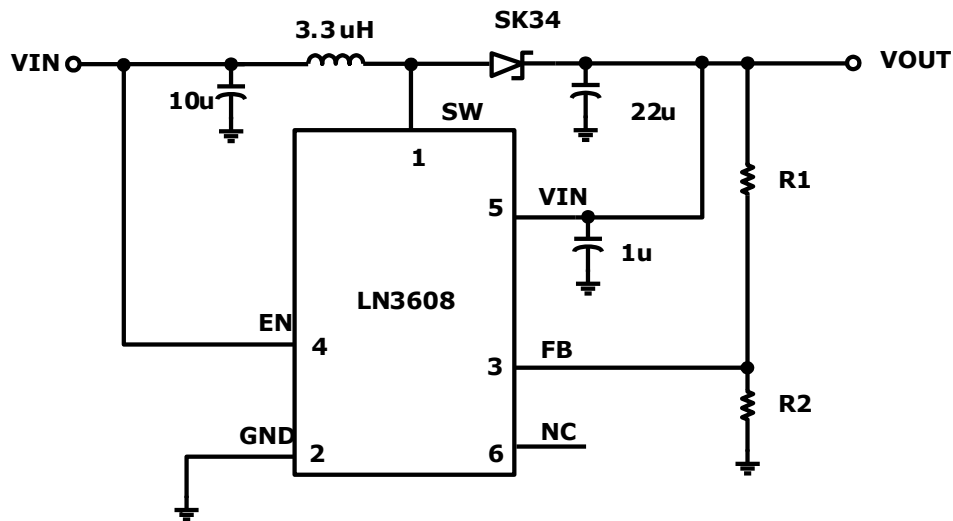
■ Marking Rule

- SOT-23-6L

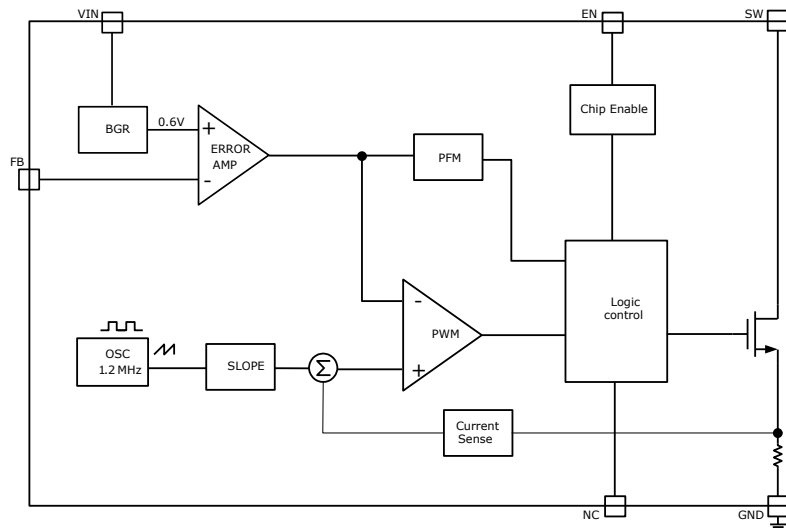


Note: ①②③④⑤⑥ Represents the assembly lot No.

■ Typical Application Circuit



■ Function Block Diagram



■ Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Unit
Input voltage	VIN	Vss-0.3~Vss+24	V
Output voltage	VOUT	Vss-0.3~Vss+24	
	VSW	Vss-0.3~Vss+24	
Output Current	ISW	4	A
Power Dissipation	PD	250	mW
Operating ambient temperature	Topr	-40~+80	°C
Storage ambient temperature	Tstg	-40~+125	

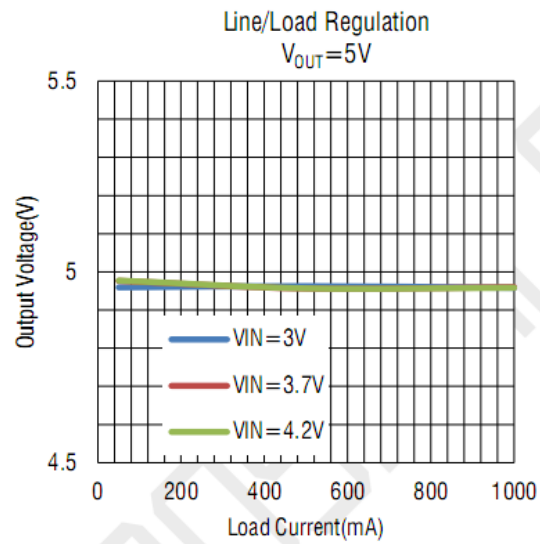
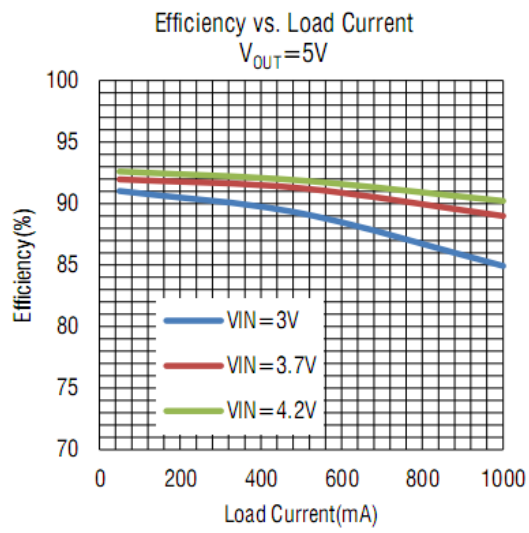
Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

■ Electrical Characteristics

(Ta=25°C, VIN=1.5V, VOUT=3.3V unless otherwise noted)

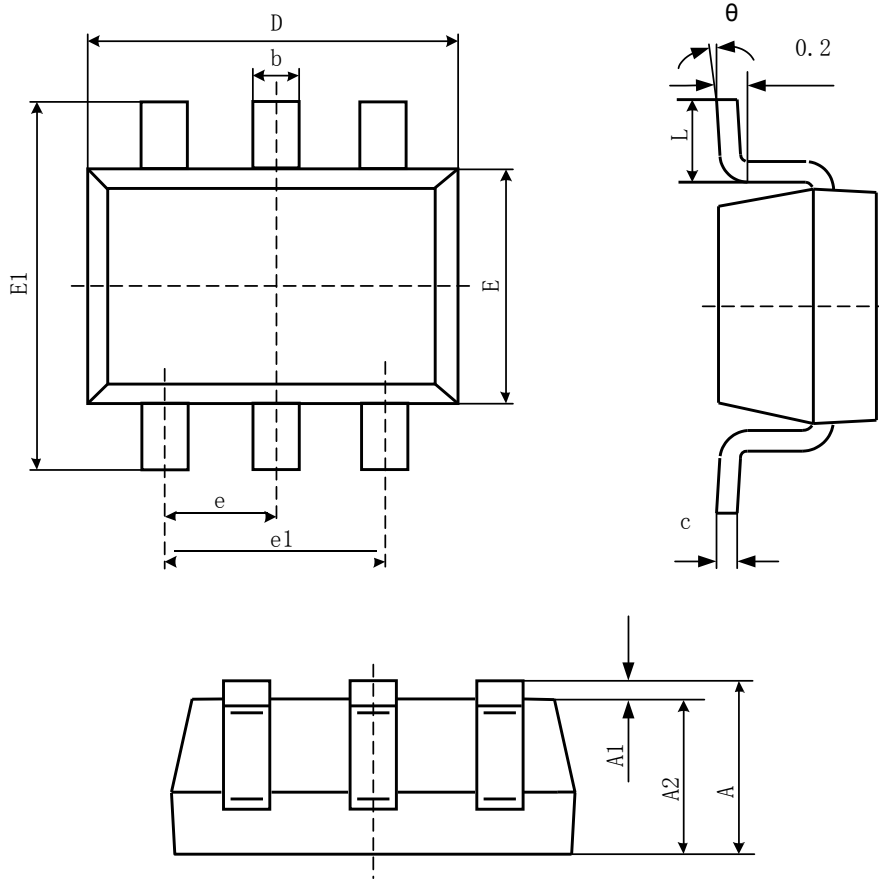
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	VOUT	-	2.5	-	24	V
Input voltage	VIN	-	2	-	24	
VIN under voltage lockout threshold	UVLO_F	-	1.7	-	2	V
VIN under voltage lockout hysteresis	UVLO_HYS	-	-	110	-	mV
Shutdown mode	IOFF	VEN<VENL	-	0.01	1	μA
I Quiescent Current (PFM)	I_PFM	VIN=3.6V, VOUT=5V	-	100	-	μA
FB Voltage	VR	VOUT=5V	588	600	612	mV
Switching frequency	FS	IOUT=1A	-	1.2	-	MHz
Maximum Duty Cycle	DMAX	VFB=0V	-	90	-	%
Internal power MOSFET resistance	RDS(on)	VIN=5V	-	80	150	mΩ
SW Current Limit	ISW	VIN=5V	3.5	-	-	A
Load regulation	ΔVLINE	IOUT=1.2A, VIN=3V~4.2V	-	0.38	-	%
Line regulation	ΔVLOAD	VIN=3.6V, IOUT=10mA~1.2A	-	0.41	-	%
EN Input High Voltage	VENH	VIN=3.6V	1.2	-	-	V
EN Input Low Voltage	VENL	VIN=3.6V	-	-	0.5	V
SW Leakage	ISW_L	VSW=20V	-	-	1	uA
Thermal Shutdown	TSHD	VIN=3.6V, IOUT=10mA	-	160	-	°C

■ Typical Performance Characteristics



■ Package Information

■ SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

■ Version History

Version history	Number	modification date	Modifies the content	Modifier	Approver
01	01	2018.08.20			